

Grass Cutting Equipment Open Spaces Committee Meeting – 28 October 2014

At the moment we use a Lloyds 5 gang trailed set to cut the grass (cutting width approximately 3.5 metres, less overlap) these are designed to cut short dry grass and are an ideal machine for cricket outfields. Unfortunately they are not designed for cutting longer grass or for use on uneven, rough ground or when wet or raining. The reason for this is that they are land wheel driven (the blades are turned by the rotation of the metal wheels), when wet these slip and the cutting cylinders block up. The speed they turn is governed by the forward motion of the tractor, so on turning or on inclines these can vary and affect the cut of the grass. The cylinders give a better cut when there is a consistent speed being delivered by the drive wheels, unfortunately if you drive too quickly with the tractor this causes the gangs to bounce and then it leaves ridges of uneven cut grass.

Because the gangs have a metal cylinder blade cutting system this cuts the grass by chopping it against a metal cutting blade (similar to a scissor action), these need to be replaced each year and the cylinders re-ground, this has an annual cost of approximately £1,000 per year.

The blades/cylinders have to be set weekly and this takes approximately 30 minutes each time, and to adjust the cutting height also takes about 30 minutes.

We have looked at several different alternatives to the gangs but due to the height required to cut the cricket outfields we have had trouble finding a machine that can do a satisfactory job cutting them to the standard required.

These have included:

Self-propelled Gangs - these come in two main types:

- 1) Trailed like the ones we have now but which have hydraulic oil driven cylinders (powered by the tractor). These cylinders will therefore be turning at a consistent speed. No matter what the forward speed of the tractor is this will give a more standard cut.
- 2) All-in-one self-driven machine. These work in the same way as above but have an engine and seat (cab/optional) built over the gangs.

Conclusion

The trailed gangs work the same as our present set. We would not have as many problems cutting the wet short grass but we would still have the high maintenance costs each year and we would have to budget for service costs for the oil pumps, pipes and drive. This machine would still not cut grass in the wet or if it gets too long. Therefore if we had another long wet spell as we did this year we would not be able to use them until we had shortened the grass by other means first. These machines cost in the region of £19,000.

The all-in-one self-driven machine cost in the region of £30000 plus service costs and adjustment times (similar to our present gangs). This makes these machines a non-viable option for the jobs required of them due to the same limitations as the trailed gangs, and because they are self-contained they are also limited to the angles

they can cut at (between 10-17%). We have large areas of land that exceed those angles and therefore make them unsafe to use (health & safety).

Other options:

Tractor Driven Rotary Mowers

These cut in the same way as the Stiga but on a larger scale. There are several companies that have now developed their mowers to cut grass to a standard acceptable for sports, as well as recreational. All the companies have two main types these are:

- 1) 3-point mounted single piece machines. These come in various sizes from 1.5 to 3 metres. They cut down to 10mm in height, are low maintenance and fairly fast.
The preferred make of this type of machine after research and demonstration is the Trimax Striker 190 or Procut S3-P3 290 costing £5-7000.
- 2) Trailed Rotary Mowers
These also come in various sizes from 3 to 10 metres. They cut down to 10mm in height, are low maintenance and fairly fast.
They are made up of several mowers fitted into a frame (similar to the gangs). They lift and fold up for transporting and can be driven on the road.
The preferred make of this type of machine is the Trimax Snake or Pegasus S3 costing £17-27000.
The Snake has a 3.2 metre set which folds up to just over 2 metres when transporting on the road. They can be stored in less than half the space taken up by the gangs
We have also looked at similar machines from a company called Wessex but the build quality and finish of cut was not up to the standard we require.

Conclusion

3-point mounted single piece machines. These machines have the finish we require on level ground but because of the limited width of cut (approximately 7ft 6in/ 2316mm) for a machine to be road legal and it would add time to the hours of cutting grass. Because it would be one ridged piece of equipment it would not follow the contours of the ground as well as our present set of gangs do now.

Trailed Rotary Mowers. This machine works in the same way as the mower above but has (in the case of the 3.2 meter machine - the snake) three smaller mowers on one frame. This enables each mower to follow the contours of the ground separately thus giving a better finish cut.

On both mowers the height is set by adjusting 4 bolts on each one (12 bolts for the trailed machine). This takes approximately 5 minutes per deck, half the time it takes us to adjust the height of the current gangs (30 minutes to adjust from normal height to cricket outfield height). We would save 30 minutes each week by not having to re-set the blades on the cylinders as we do on the current gangs.

These mowers run on two rollers one at the front and one at the rear, not on skids as some cheaper models do (skids mark and dig into the ground when wet or turning). Because the metal blades should only come into contact with grass and not metal against metal as on the current gangs they would only need to be replaced when damaged or worn. The blades cost approximately £5 each (including nut and bolt), 2

per spindle, 3 spindles per mower on the trailed machine. Even if all 18 blades were replaced twice each year it would still be cheaper than the annual service of the present gangs

18 x £5 x 2 (for two complete sets of blades/year) = £180
 3 x drive belts @ £20 each = £60
 Approximate total annual service cost = £240
 (Saving approximately £760 per year over the current gangs.)

We had a demonstration of the Trimax Snake machine on 11 August 2014. The model was a 3 mower deck, with a cutting width of 3234mm (127”), overall width of 3372mm (133”) and a transport/storage width of 2050mm (81”). The recommended retail price is £17990 before discount or trade in and has a 3 year warranty.

The main football pitch was cut at a recommended height of 30mm and the finish was a far superior cut to that of the current gangs. The cut was cleaner and took off the majority of seed heads (bennets) the speed was a fraction faster than the current gangs but was a far easier machine to use as it was more agile. It also has the capacity to be reversed, and to lift the cutting decks off the ground to avoid objects (paths/manholes etc). During the demonstration there was a very heavy shower and cutting continued without any problems or change in the cut. (The current gangs were being used work would have had to stop and the gangs put away to wait for a dry day.) The decks were then reset to 15mm and the cricket outfield cut. Again the overall finish was better than the normal finish we get at present.

Comparison Chart

	Cricket grass height	Football grass height	Cut damp grass	Cut in wet	Cut Long grass	Take on road
Lloyds trailed gangs	X	X				
Trailed self propelled gangs	X	X	X			
Self drive gangs	X	X	X			X
Fixed tractor rotary mower	X	X	X	X	X	X
Trailed tractor rotary mower	X	X	X	X	X	X

OVERALL SUMMARY

The old gangs are becoming a dated form of grass cutting management with the introduction of new technology.

The updated forms of cylinder mowers (hydraulic driven) have improved their range of cutting ability but still carry a hefty maintenance cost to keep them in good order each year. Their limitations of use still mean we would have to look for other equipment to keep on top of the grass cutting when we have prolonged spells of wet weather and the grass gets long.

The tractor mounted Trimax mower would do all we want but would take almost twice as long due to its size of cut therefore add to the workload and not helping it.

The tractor trailed Trimax Snake model would also all we want but better. It would also enable the grass to be cut in the wet. As this machine can travel along the road it would also enable us to cut West Crescent and reduce the number of complaints when we haven't been able to get up the tractor up the hill. This machine could also be taken to Winterhay and the Cemetery to cut the larger spaces of grass and help take some of the workload off the Stiga and help prolong the life of that too.

Approximate cost saving per year against gangs:

	GANGS (2007)	SNAKE (2014)
Cost new	£15000	£17990
Yearly service	£1000	£240
Height adjustment weekly @ £10/hr (figure from Gantt chart to date) 23hours/year	£230	£115
Reset blades (weekly 30mins) 44 weeks cutting/year	£220	£0
Cost per year	£1450	£355
Cost saving per year	0	£1095

Both machines have a life expectancy of about 10 years so the savings over that period of time could be over £10,000.

The running costs via the tractor would be similar as would the cost of general maintenance i.e. greasing moving parts.

We would also gain on shed storage space that at the moment is a potential health and safety issue because we have to climb over the gangs to get in and out.

We would also be able to lessen the complaints when we are unable to cut grass due to the weather, and therefore keep it tidy and under control.

Quotes for the preferred machine – the Trimax Snake

Supplier	Cost	Road Kit	Discount	Part Exchange	Total Cost
A	£17990	£250	£2091	£500	£15649
B	£17990	£250	£1800	£2250	£14190
C	£17999	£250	£3649	£1000	£13600

There is £12175 in Earmarked Reserves for Gang Mower replacement and there is £1200 in the current budget for servicing the gang mowers this winter.